**ONE: FIND THE VALUE OF X**

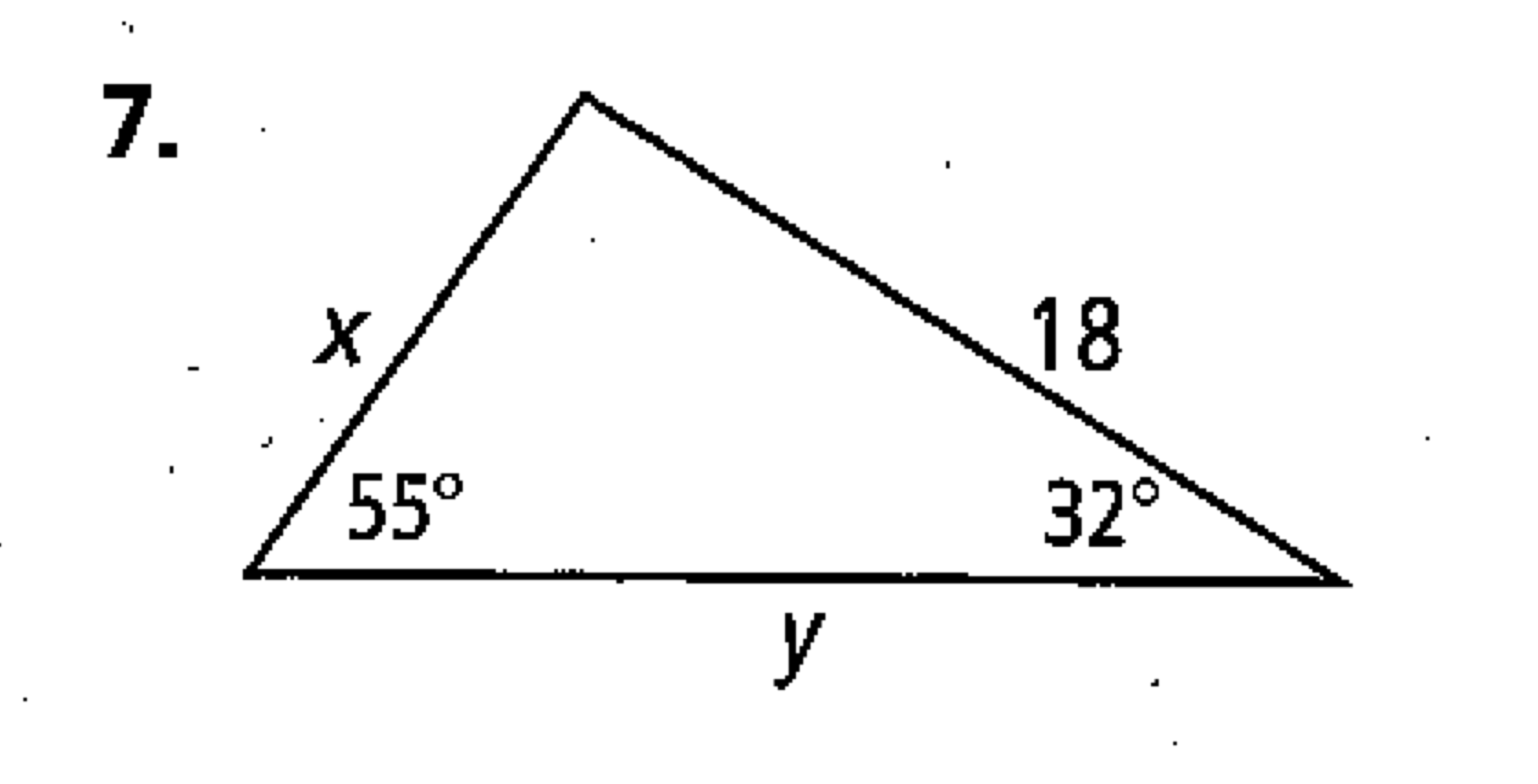
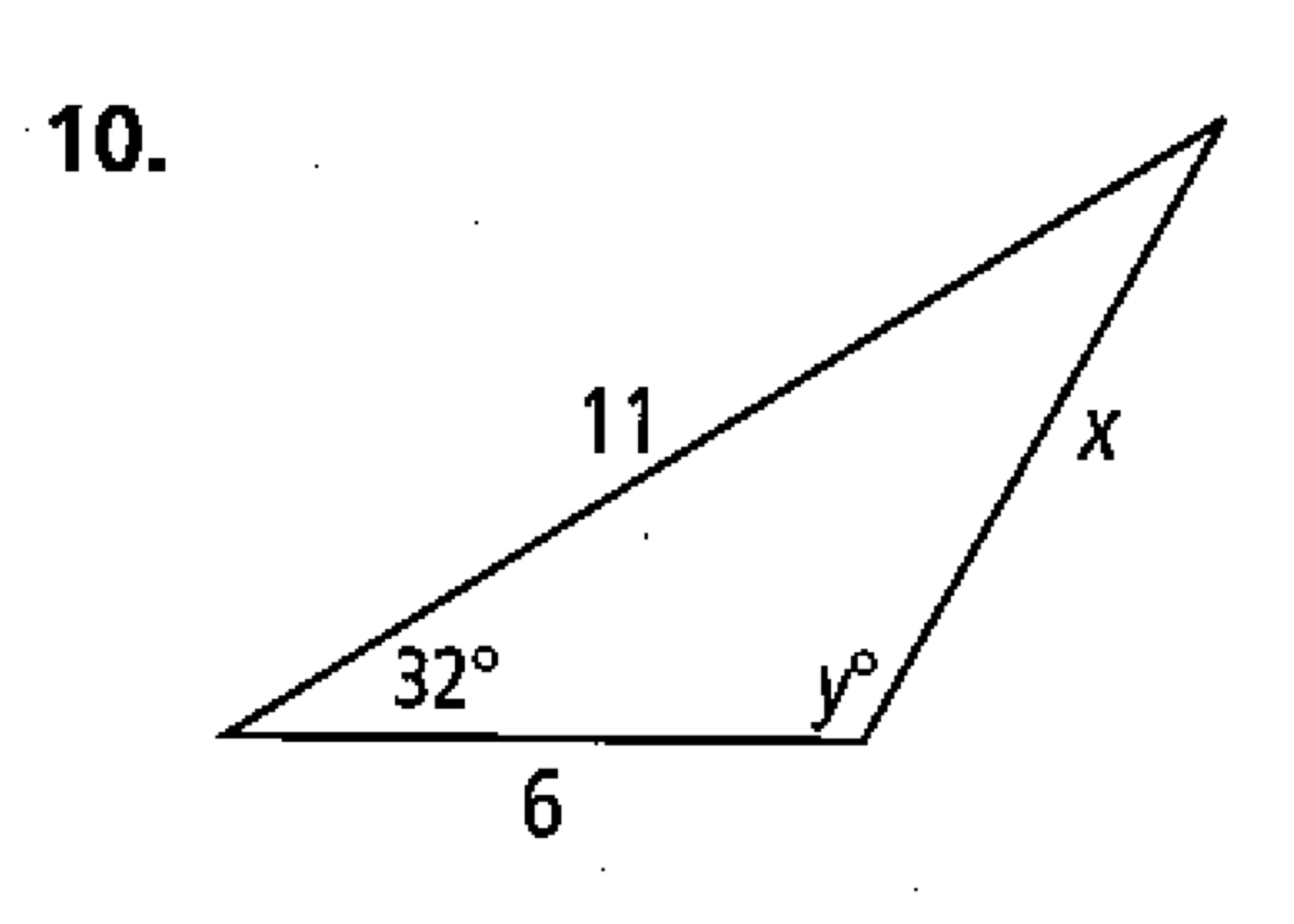




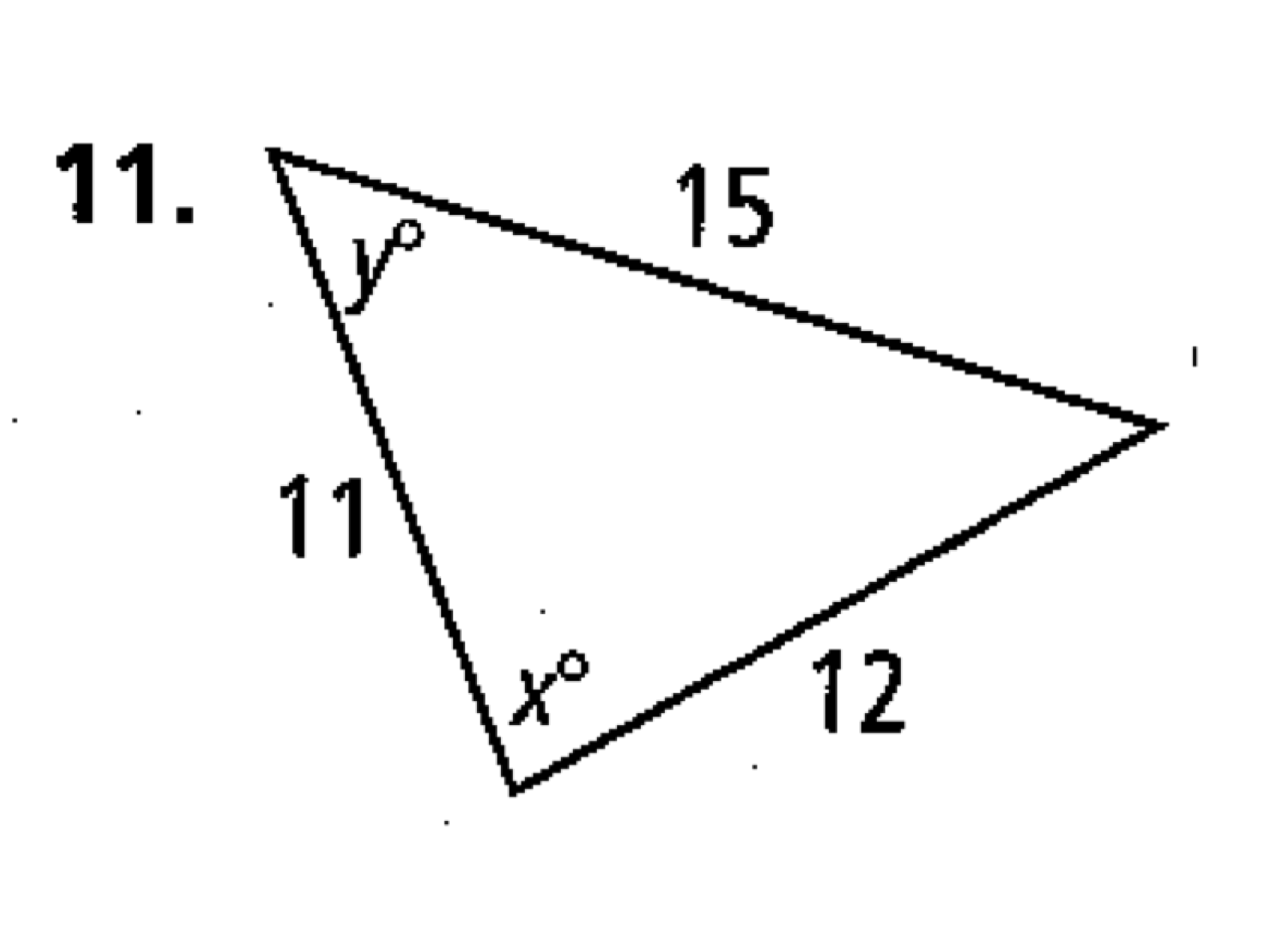
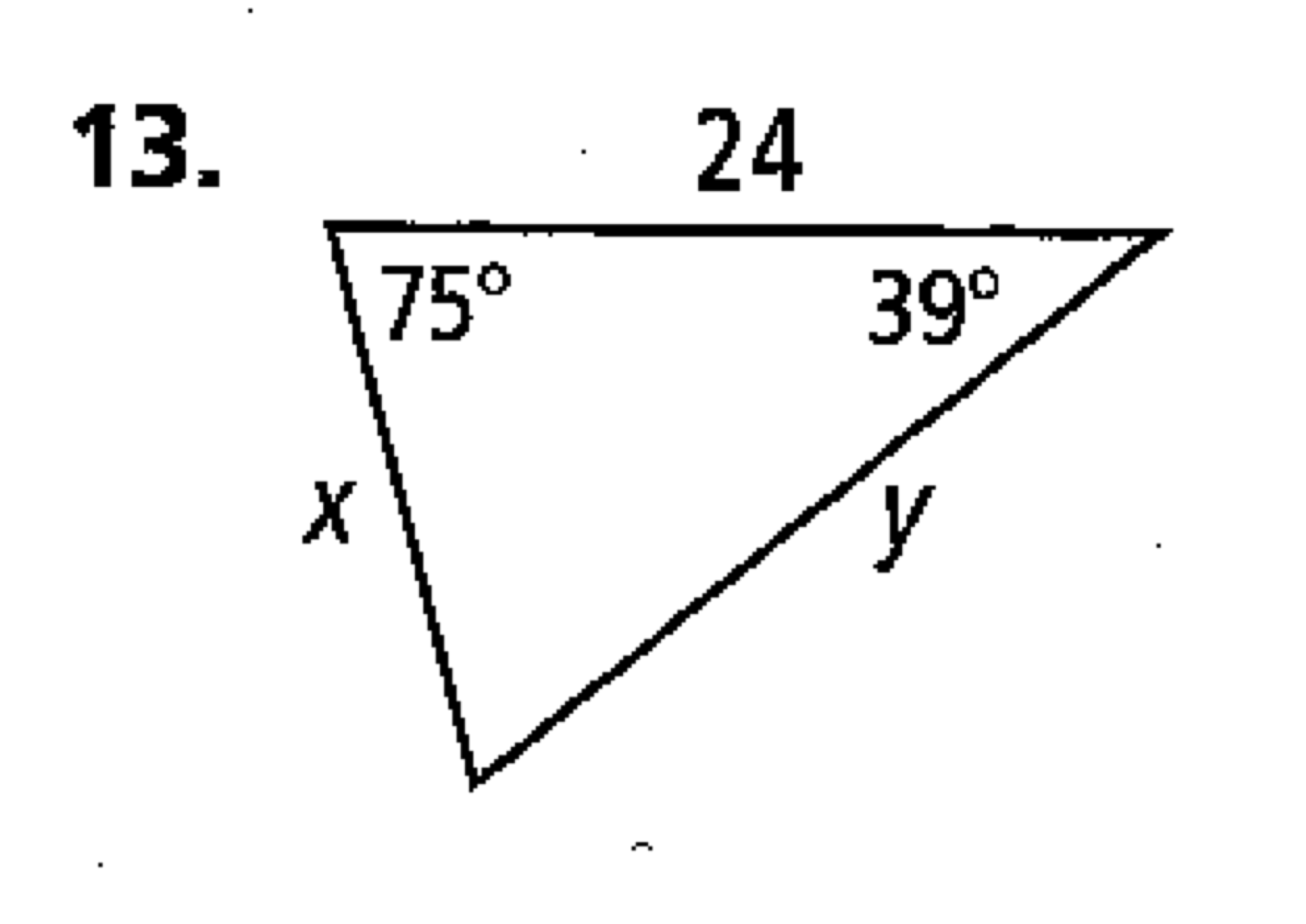
**TWO: FIND THE MISSING ANGLE**



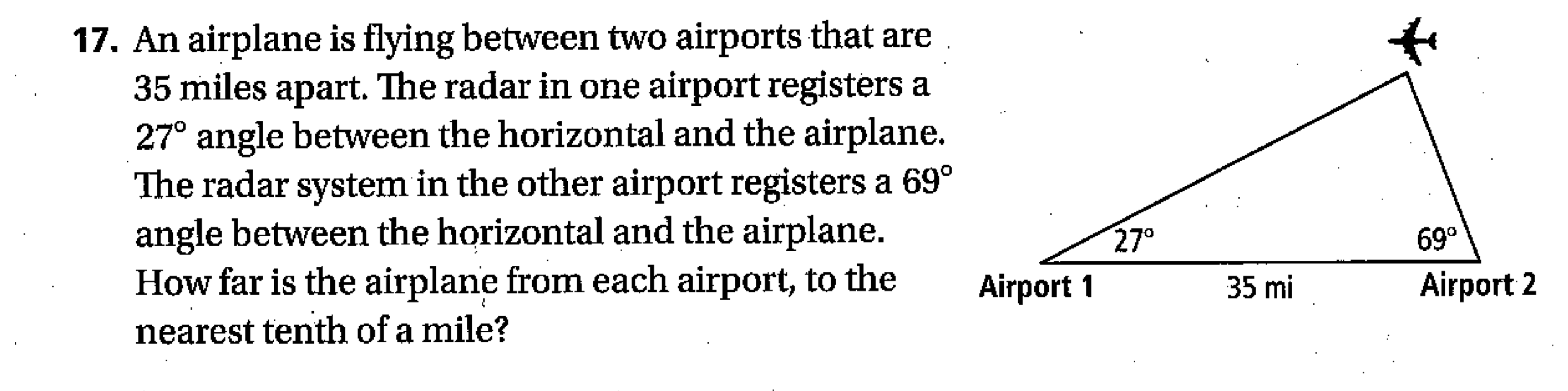
**THREE: LAW OF SINES AND LAW OF COSINES**

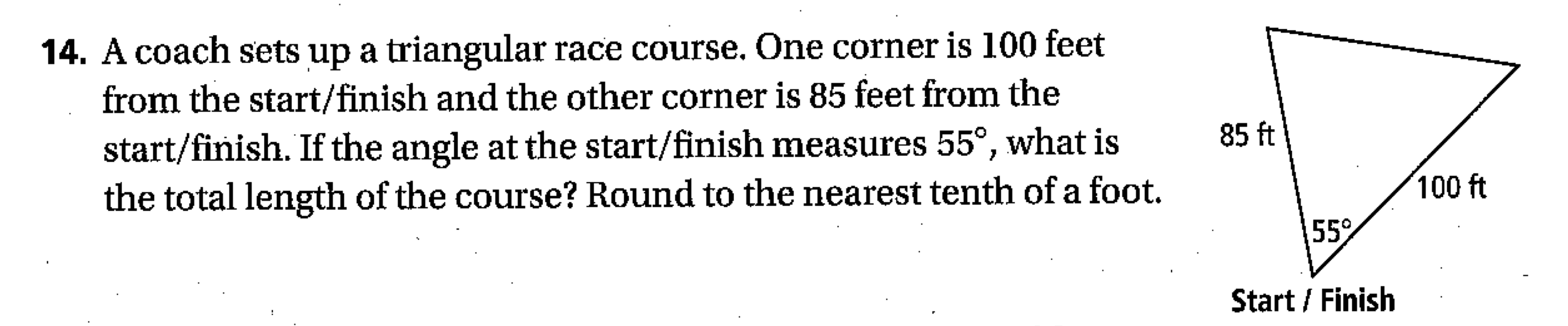
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**For #7, find the value of x and y. For #10, find the value of x.**

** **

**For #11, find the value of x and y. For #13, find the value of x.**

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**FOUR: ANGLE OF DEPRESSION WORD PROBLEMS**

1. A 20 foot ladder leans against a house, making a 75 degree angle with the ground.  How far above the ground is the top of the ladder?

2. A boy stands 50 feet away from a building, and looks up at the top of the building with an angle of elevation of 65 degrees.  How tall is the building?

3. A bomber flies 1000 meters above the ground, and sees its target below with an angle of depression of 42 degrees.  How many more horizontal meters should the plane travel before dropping its bomb (assuming it will drop straight down)?

4. A boy leans out a window 40 feet above the ground and heaves a water balloon out the window, with an angle of depression of 32 degrees.  He is aiming for a poor unsuspecting little girl who stands on the ground 20 feet away from the building.  Does the balloon hit the girl?  If not, did the balloon go too far or did it fall short of the girl?

5. From the top of a canyon, the angle of depression to the far side of the river is 58 degrees, and the angle of depression to the near side of the river is 74 degrees. The depth of the canyon is 191 m. What is the width of the river at the bottom of the canyon? Round to the nearest tenth of a meter.

6. Marion is observing the launch of a space shuttle from the command center. When she first sees the shuttle, the angle of elevation to it is 16 degrees. Later, the angle of elevation is 74 degrees. If the command center is 1 mile from the launch pad, how far did the shuttle travel while Marion was watching? Round to the nearest tenth of a mile.

7. Katie and Kim are attending a theater performance. Katie's seat is at floor level. She looks down at an angle of 18 degrees to see the orchestra pit. Kim's seat is in the balcony directly above Katie. Kim looks down at an angle of 42 degrees to see the pit. The horizontal distance from Katie's seat to the pit is 46 ft. What is the vertical distance between Katie's seat and Kim's seat? Round to the nearest inch.

8. A plane is flying at a constant altitude of 14,000 ft and a constant speed of 500 mi/h. The angle of depression from the plane to a lake is 6 degrees. To the nearest minute, how much time will pass before the plane is directly over the lake?

**ANSWER KEY**

**ONE**

9. 13.93

10. 8.12

11. 5.98

12. 5.5

13. 4.6

14. 12.88

15. 6.2

16. 2.05

**TWO**

7. 68

8. 45

9. 38

10. 36

11. 37

12. 21

13. 39

14. 22

**THREE**

7. x = 11.6, y = 21.9

10. x = 6.7125

11. x = 81.28, y = 52.257

13 x = 16.53

17. 32.8 miles from Airport 1 and 15.98 miles from Airport 2

14. 271.4 feet

**FOUR**

See “Word Problems Answer Key Document” on wiki or in hard copy in Ms. Rapoport’s room